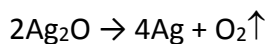


## Answer on Question #63767 - Chemistry – General Chemistry

Silver (I) oxide ( $\text{Ag}_2\text{O}$ ) decomposes completely at temperatures in excess of  $300^\circ\text{C}$  to produce metallic silver and oxygen gas. When 1.6 grams of impure  $\text{Ag}_2\text{O}$  is decomposed and allowed to cool to STP, the reaction is found to yield 72.1 mL of oxygen gas. What is the percentage of  $\text{Ag}_2\text{O}$  in the original impure sample?

### Solution.



$$M(\text{Ag}_2\text{O}) = 108 \times 2 + 16 = 232 \text{ g/mol}$$

$$2 \times 232 \text{ g Ag}_2\text{O} - 22.4 \text{ L O}_2$$

$$x \text{ g Ag}_2\text{O} - 0.0721 \text{ L O}_2$$

$$x = 0.0721 \times 2 \times 232 / 22.4 = 1.5 \text{ g Ag}_2\text{O}$$

$$w(\text{Ag}_2\text{O}) = 1.5 / 1.6 = 0.9375$$

$$w(\text{Ag}_2\text{O}) = 0.9375 \times 100 = 93.75\%$$

**Answer:**  $w(\text{Ag}_2\text{O}) = 93.75\%$

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